**Food Security: Nebraska Case Study**

(Includes all background material)

**Students Learning Outcomes**

Students will be able to:

1. Identify factors contributing to food security and food insecurity in a largely rural region.
2. Synthesize social and environmental datasets to conduct a spatial analysis to identify people and/or areas most vulnerable for food security.
3. Consider the role of a major international food producing region in global food security.
4. Propose ways to increase food security.
5. Communicate research orally and visually (PowerPoint presentation).

**Overview (select from one of two assignments)**

1. Students are part of a special ad hoc committee that has been assigned to create a presentation on the main issues causing food insecurity in rural Nebraska to the governor of Nebraska. They should incorporate information from the assigned readings and the analyses they do with the following ArcGIS online activity. Additional resources can be included as well.
2. Students are part of special ad hoc committee who are assigned to examine the role of Nebraska agriculture on national and international scales, and consider the roles of climate change, biofuel production, livestock production, and/or commercial vs. family scale farms on global food security. Based on their investigations, they will give a presentation to the governor of Nebraska on creating recommendations so Nebraska agriculture will intentionally support global food insecurity issues, with specific reference to foreseen future changes in climate and food production.

As their final product, students are to create a PowerPoint presentation describing the context of the wicked problem of food insecurity and the potential solutions to their selected problem. The presentation should include one or more maps they create in AGO. This presentation will be given in Unit 6.

**Pre-Class Assignment**

Read about Nebraska, climate, and demographics here: <https://en.wikipedia.org/wiki/Nebraska>

Nebraska Agriculture Facts <http://www.nda.nebraska.gov/facts.pdf>

U.S. Census Bureau Quick Facts <http://www.census.gov/quickfacts/table/PST045215/00>

1. How would you describe the ethnic and racial diversity in Nebraska?
2. What type of climate does Nebraska have? Is this an area that is good for growing crops and raising animals for food? Why or why not?
3. What type(s) of challenges would Nebraska face from climate change? How might this/these challenges impact the growing and raising of food, as well as distribution of food to rural communities?

**Background Materials**

**Beginning your Case Study (Unit 4)**

Depending on the topic of interest, resources to start development of your team’s presentation are listed below. You can choose any of these areas as your focus.

1. **Rural Food Security**

Readings

* Halverson, J., Brown, C., Olfert, M., Ahern, M., and Abildso, C. 2010 Patterns of Food Insecurity, Food Availability, and Health Incomes Among Rural and Urban Counties. <https://www.ruralhealthresearch.org/projects/100002157>
* Rural Health Information Hub 2016 Rural Hunger and Access to Healthy Food. <https://www.ruralhealthinfo.org/topics/food-and-hunger>
* Bailey, J. 2010 Rural Grocery Stores: Importance and Challenges. Center for Rural Affairs. <http://files.cfra.org/pdf/rural-grocery-stores.pdf>

Based on the readings, answer the following questions.

1. Where is food obtained by rural consumers?
2. Where is food in the grocery stores transported from (e.g., air, truck, rail, boat)?
3. How much of food consumed in rural areas is locally produced?
4. What are some of the issues facing rural communities with respect to food access? How are these issues being addressed, or how could they be addressed?
5. **Nebraska- Global Food Exporter**

Select those resources that best fit the topic your team has identified as your research starting point:

* **Biofuels**
* eXtension 2016 Biodiesel and the Food vs. Fuel Debate

<http://articles.extension.org/pages/27136/biodiesel-and-the-food-vs-fuel-debate>

* Walsh, B. 2008 Solving the Biofuels vs. Food Problem. <http://content.time.com/time/health/article/0,8599,1701221,00.html>

Based on the readings, be able to answer the following questions.

1. What are the strengths, weaknesses, opportunities and threats to global food security from the perspective of biofuel production?
2. Based on your investigations, what would be recommendations for Nebraska’s biofuel industry?

* **Climate Change**
* Banthke, D., Oglesby, R, Rower, C. and Wilhite, D. Understanding and Assessing Climate Change: Implications for Nebraska. <http://snr.unl.edu/download/research/projects/climateimpacts/2014ClimateChange.pdf>
* U.S. Global Change Research Program 2014. Regional Highlights from the Third National Climate Assessment. Climate Change Impacts in the United States: Great Plains. Download from <http://nca2014.globalchange.gov/report/regions/great-plains>
* Science Daily 2015 Great plains agricultural greenhouse gas emissions could be eliminated, 7 August 2015 <http://www.sciencedaily.com/releases/2015/08/150807094645.htm>

Based on the readings, be able to answer the following questions.

1. What are the major threats from climate change to agriculture in Nebraska?
2. What adaptations might farmers face in a future warming climate?
3. Do you envision or recommend a change in Nebraska’s role in global food production in response to future climate change?

* **Agribusiness and Earth System Sustainability**

This resource provides numerous papers addressing different aspects of food production and food security.

* Dentoni, D., Hospes, O., and Ross, R. 2012 Managing Wicked Problems in Agribusiness: The Role of Multi-Stakeholder Engagements in Value Creation. Special Issue, International Food and Agribusiness Management Review, 15(B): 1-165. <http://www.ifama.org/files/15spib.pdf>

Based on the readings, be able to answer the following questions.

1. Describe some of the differences between smallholder and agribusiness agriculture. What are some of the advantages and disadvantages of conducting agriculture at scale?
2. What are some of the sustainability concerns associated with agribusiness? What are some of the sustainability concerns associated with smallholder agriculture?